DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA750)

Migration of Contaminated Groundwater Under Control

Facility Name: Dore Industrial Development Facility (formerly Prestolite Motor Company)
Facility Address: Morton and Backus Streets, Bay City, Michigan
Facility EPA ID #: MID 005 359 286

1. Has **all** available relevant/significant information on known and reasonably suspected releases to the groundwater media, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

   ☒ If yes - check here and continue with #2 below.

   ☐ If no - re-evaluate existing data, or

   ☐ If data are not available, skip to #8 and enter"IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Migration of Contaminated Groundwater Under Control" EI

A positive "Migration of Contaminated Groundwater Under Control" EI determination ("YE" status code) indicates that the migration of "contaminated" groundwater has stabilized, and that monitoring will be conducted to confirm that contaminated groundwater remains within the original "area of contaminated groundwater" (for all groundwater "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Migration of Contaminated Groundwater Under Control" EI pertains ONLY to the physical migration (i.e., further spread) of contaminated ground water and contaminants within groundwater (e.g., non-aqueous phase liquids or NAPLs). Achieving this EI does not substitute for achieving other stabilization or final remedy requirements and expectations associated with sources of contamination and the need to restore, wherever practicable, contaminated groundwater to be suitable for its designated current and future uses.

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

2. Is **groundwater** known or reasonably suspected to be **"contaminated"**[1] above appropriately protective "levels" (i.e., applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action, anywhere at, or from, the facility?

☒ If yes - continue after identifying key contaminants, citing appropriate "levels," and referencing supporting documentation.

☐ If no - skip to #8 and enter "YE" status code, after citing appropriate "levels," and referencing supporting documentation to demonstrate that groundwater is not "contaminated."

☐ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s):

The latest sampling (December 2005) indicates exceedances of the Generic Groundwater Surface Water Interface (GSI) criteria in three wells (MW-8, MW-9 and MW-10), for cis-1,2-Dichloroethene (1,100 ug/l) and Vinyl Chloride (28, 72 and 1,200 ug/l). The facility was authorized by the MDEQ on October 11, 2000 to use mixing zone based criteria in lieu of the generic GSI criteria. The two parameters that exceed Generic GSI criteria meet the Mixing Zone GSI criteria.

In addition to the above, the groundwater exceeds the Drinking Water criteria for cis-1,2-Dichloroethene (1,100 ug/l) for one well (MW-9), trichloroethene (11 and 29 ug/l) for two wells (MW-8 and 33-15) and vinyl chloride (28, 72 and 1,200 ug/l) for three wells (MW-8, MW-9 and MW-10).

All of the wells sampled are GSI compliance wells and are located along the Saginaw River.

This information was obtained in the following documents:

Annual Groundwater Monitoring Report for 2005, Dore Industrial Development Facility, Bay City, Michigan, May 2006

Post Shutdown Groundwater Monitoring Results - 3rd Quarter, Dore Industrial Development Facility, Bay City, Michigan, April 11, 2002

Corrective Measures Implementation (CMI) Work Plan/Remedial Action Plan, Dore Industrial Development, Bay City, Michigan, April 2002

Footnotes:
[1]"Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriate "levels" (appropriate for the protection of the groundwater resource and its beneficial uses).

3. Has the **migration** of contaminated groundwater **stabilized** (such that contaminated groundwater is expected to remain within "existing area of contaminated groundwater"[2] as defined by the monitoring locations designated at the time of this determination)?

☒ If yes - continue, after presenting or referencing the physical evidence (e.g., groundwater sampling/measurement/migration barrier data) and rationale why contaminated groundwater is expected to remain within the (horizontal or vertical) dimensions of the "existing area of groundwater contamination"[2]).

☐ If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the "existing area of groundwater contamination"[2]) - skip to #8 and enter "NO" status code, after providing an explanation.

☐ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s):

The groundwater VOC plume has actually reached the Saginaw River. The plume vents to the Saginaw River and can go no further, therefore it has stabilized. The plume will not increase perpendicular to the river because of the direction and velocity of the groundwater flow. Concentrations at the Saginaw River are not increasing. The concentrations that are venting to the river are within the limits of the mixing zone GSI criteria.

[2] "existing area of contaminated groundwater" is an area (with horizontal and vertical dimensions) that has been verifiably demonstrated to contain all relevant groundwater contamination for this determination, and is defined by designated (monitoring) locations proximate to the outer perimeter of "contamination" that can and will be sampled/tested in the future to physically verify that all "contaminated" groundwater remains within this area, and that the further migration of "contaminated" groundwater is not occurring. Reasonable allowances in the proximity of the monitoring locations are permissible to incorporate formal remedy decisions (i.e., including public participation) allowing a limited area for natural attenuation.

4. Does "contaminated" groundwater **discharge** into **surface water** bodies?

☒ If yes - continue after identifying potentially affected surface water bodies.

☐ If no - skip to #7 (and enter a "YE" status code in #8, if #7 = yes) after providing an explanation and/or referencing documentation supporting that groundwater "contamination" does not enter surface water bodies.

☐ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s):

Groundwater from the site vents/discharges into the Saginaw River. But as mentioned in earlier points, the facility has obtained a mixing zone determination. The Water Bureau has reviewed the location and the discharge and determined discharge criteria for the parameters of concern at the site. The groundwater sampling results have shown that the groundwater at the site meets the criteria that were given. And they have met the criteria for the entire 5 years since the mixing zone determination was approved.

5. Is the **discharge** of "contaminated" groundwater into surface water likely to be **"insignificant"** (i.e., the maximum concentration[3] of each contaminant discharging into surface water is less than 10 times their appropriate groundwater "level," and there are no other conditions (e.g., the nature, and number, of discharging contaminants, or environmental setting), which significantly increase the potential for unacceptable impacts to surface water, sediments, or eco-systems at these concentrations)?

☒ If yes - skip to #7 (and enter "YE" status code in #8 if #7 = yes), after documenting: 1) the maximum known or reasonably suspected concentration[3] of key contaminants discharged above their groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) provide a statement of professional judgement/explanation (or reference documentation) supporting that the discharge of groundwater contaminants into the surface water is not anticipated to have unacceptable impacts to the receiving surface water, sediments, or eco-system.

☐ If no - (the discharge of "contaminated" groundwater into surface water is potentially significant) - continue after documenting: 1) the maximum known or reasonably suspected concentration[3] of each contaminant discharged above its groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) for any contaminants discharging into surface water in concentrations greater than 100 times their appropriate groundwater "levels," the estimated total amount (mass in kg/yr) of each of these contaminants that are being discharged (loaded) into the surface water body (at the time of the determination), and identify if there is evidence that the amount of discharging contaminants is increasing.

☐ If unknown - enter "IN" status code in #8.

Rationale and Reference(s):

There are six parameters of concern at the site: 1,1-Dichloroethane (1,1 DCA), cis-1,2-Dichloroethene (cis-1,2-DCE), Trans-1,2-Dichloroethene (trans-1,2-DCE), 1,1,1-Trichloroethane (1,1,1-TCA), Trichloroethene (TCE) and Vinyl Cloride (VC).

The concentrations of 1,1-DCA appear to be stable over the last 4 years. The concentration of cis-1,2-DCE appears to have decreased. The concentrations of trans-1,2-DCE and 1,1,1-TCA appear to have decreased and are now below or near the detection limits. The concentration of TCE in one well appears to have increased, but in another well has decreased (we only really see TCE in these two wells). The concentration of VC appears to have increased.

In the case of the two parameters that have shown an increase: The TCE in one well was only an increase from 4.8 ug/l in 2002 to 11 ug/l in 2005 and the Mixing Zone GSI criteria is 3,500 ug/l. The increase of VC was expected, but the maximum increased from 760 ug/l in 2002 to 1,200 ug/l in 2005, but the Mixing Zone GSI criteria for the site is 17,000 ug/l.

Any increase shown on the site concentrations are still orders of magnitude below the Mixing Zone GSI criteria that was given to the site.

[3] As measured in groundwater prior to entry to the groundwater-surface water/sediment interaction (e.g., hyporheic) zone.

6. Can the **discharge** of "contaminated" groundwater into surface water be shown to be "**currently acceptable**" (i.e., not cause impacts to surface water, sediments or eco-systems that should not be allowed to continue until a final remedy decision can be made and implemented[4])?

☐ If yes - continue after either: 1) identifying the Final Remedy decision incorporating these conditions, or other site-specific criteria (developed for the protection of the site's surface water, sediments, and eco-systems), and referencing supporting documentation demonstrating that these criteria are not exceeded by the discharging groundwater; OR
2) providing or referencing an interim-assessment,[5] appropriate to the potential for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of a trained specialists, including ecologist) adequately protective of receiving surface water, sediments, and eco-systems, until such time when a full assessment and final remedy decision can be made. Factors which should be considered in the interim-assessment (where appropriate to help identify the impact associated with discharging groundwater) include: surface water body size, flow, use/classification/habitats and contaminant loading limits, other sources of surface water/sediment contamination, surface water and sediment sample results and comparisons to available and appropriate surface water and sediment "levels," as well as any other factors, such as effects on ecological receptors (e.g., via bio-assays/benthic surveys or site-specific ecological Risk Assessments), that the overseeing regulatory agency would deem appropriate for making the EI determination.

☐ If no - (the discharge of "contaminated" groundwater can not be shown to be "**currently acceptable**") - skip to #8 and enter "NO" status code, after documenting the currently unacceptable impacts to the surface water body, sediments, and/or eco-systems.

☐ If unknown - skip to 8 and enter "IN" status code.

Rationale and Reference(s):_____

[4] Note, because areas of inflowing groundwater can be critical habitats (e.g., nurseries or thermal refugia) for many species, appropriate specialist (e.g., ecologist) should be included in management decisions that could eliminate these areas by significantly altering or reversing groundwater flow pathways near surface water bodies.

[5] The understanding of the impacts of contaminated groundwater discharges into surface water bodies is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration to be reasonably certain that discharges are not causing currently unacceptable impacts to the surface waters, sediments or eco-systems.

7. Will groundwater **monitoring** / measurement data (and surface water/sediment/ecological data, as necessary) be collected in the future to verify that contaminated groundwater has remained within the horizontal (or vertical, as necessary) dimensions of the "existing area of contaminated groundwater?"

☒ If yes - continue after providing or citing documentation for planned activities or future sampling/measurement events. Specifically identify the well/measurement locations which will be tested in the future to verify the expectation (identified in #3) that groundwater contamination will not be migrating horizontally (or vertically, as necessary) beyond the "existing area of groundwater contamination."

☐ If no - enter "NO" status code in #8.

☐ If unknown - enter "IN" status code in #8.

Rationale and Reference(s):

Groundwater will continue to be sampled for the six parameters of concern: 1,1-Dichloroethane (1,1 DCA), cis-1,2-Dichloroethene (cis-1,2-DCE), Trans-1,2-Dichloroethene (trans-1,2-DCE), 1,1,1-Trichloroethane (1,1,1-TCA), Trichloroethene (TCE) and Vinyl Cloride (VC).

They will be sampled for in five (5) wells located along the Saginaw River: MW-8, MW-9, MW-10, 32-15 and 33-15. Sampling will continue as described in the Corective Measures Implementation Workplan/Remedial Action Plan (11/2002) and the Sampling and Analysis Plan (09/2001).

This information was obtained in the following documents:

Annual Groundwater Monitoring Report for 2005, Dore Industrial Development Facility, Bay City, Michigan, May 2006

Post Shutdown Groundwater Monitoring Results - 3rd Quarter, Dore Industrial Development Facility, Bay City, Michigan, April 11, 2002

Corrective Measures Implementation (CMI) Work Plan/Remedial Action Plan, Dore Industrial Development, Bay City, Michigan, April 2002

8. Check the appropriate RCRIS status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).

☒ YE - Yes, "Migration of Contaminated Groundwater Under Control" has been verified. Based on a review of the information contained in this EI determination, it has been determined that the "Migration of Contaminated Groundwater" is "Under Control" at the Dore Industrial Development Facility (Prestolite Motor Company) facility, EPA ID # **MID 005 359 286**, located at Morton and Backus Streets, Bay City, Michigan . Specifically, this determination indicates that the migration of "contaminated" groundwater is under control, and that monitoring will be conducted to confirm that contaminated groundwater remains within the "existing area of contaminated groundwater" This determination will be re-evaluated when the Agency becomes aware of significant changes at the facility.

☐ NO - Unacceptable migration of contaminated groundwater is observed or expected.

☐ IN - More information is needed to make a determination.

Completed by (signature) Date **July 17, 2006**
(print)**Ronald Stone**
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Supervisor (signature) Date **July 17, 2006**
(print)**David Slayton**
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Facility Name: Dore Industrial Development Facility (formerly Prestolite Motor Company)
EPA ID#: MID 005 359 286
City/State: Morton and Backus Streets, Bay City, Michigan

MIGRATION OF CONTAMINATED GROUNDWATER UNDER CONTROL (CA 750)